

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference PHNL040109WO	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. PCT/IB2005/050400	International filing date ( <i>day/month/year</i> ) 31 January 2005 (31.01.2005)	Priority date ( <i>day/month/year</i> ) 06 February 2004 (06.02.2004)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant KONINKLIJKE PHILIPS ELECTRONICS N.V.			

	<ol style="list-style-type: none"> <li>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i>.1(a).</li> <li>2. This REPORT consists of a total of 6 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</li> </ol>																								
	<ol style="list-style-type: none"> <li>3. This report contains indications relating to the following items:           <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 15%; text-align: center;">Box No. I</td> <td style="width: 70%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;">Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;">Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;">Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;">Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;">Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;">Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;">Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> </li> <li>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</li> </ol>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input checked="" type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																							

Date of issuance of this report 07 August 2006 (07.08.2006)	
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer  Cecile Chatel e-mail: pt13@wipo.int

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

REC'D 06 MAY 2005

WIPO

PCT

PCT

To:

see form PCT/ISA/220

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

### FOR FURTHER ACTION

See paragraph 2 below

International application No.  
PCT/B2005/050400

International filing date (day/month/year)  
31.01.2005

Priority date (day/month/year)  
06.02.2004

International Patent Classification (IPC) or both national classification and IPC  
G06T5/00

Applicant  
KONINKLIJKE PHILIPS ELECTRONICS N.V.

#### 1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

#### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1b/s(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

#### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx. 523656 epmu d  
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**Box No. I Basis of the opinion**

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
 This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:  
 a sequence listing  
 table(s) related to the sequence listing
  - b. format of material:  
 in written format  
 in computer readable form
  - c. time of filing/furnishing:  
 contained in the international application as filed.  
 filed together with the international application in computer readable form.  
 furnished subsequently to this Authority for the purposes of search.
3.  In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IB2005/050400

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or  
industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	1-10
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

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**Box No. VII Certain defects in the International application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

1 Reference is made to the following documents:

D1: Lacroix V., A Three-Module Strategy for Edge Detection, IEEE Trans. on Pattern Analysis and Machine Intelligence, Vol. 10, No. 6, November 1988, pp. 803-810.  
D2: Ikonomopoulos A., An Approach to Edge Detection Based on the Direction of Edge Elements, Computer Graphics and Image Processing 19, 179-195, 1982

2 **Technical Field:** Edge detection and enhancement.

3 **Independent claims:** 1 (apparatus), 9 (method), 10 (computer program)

4 **Closest Prior Art:** Document D1 describes a strategy for edge detection, where the first (classical) module for calculation of edge strength and direction is followed by the second module of assigning to each pixel a likelihood (i.e. relevance value) of being an edge and the third module, which uses contextual information to finally determine the actual elements of the edge.

5 **Problem:** Determine likelihood (relevance) that current pixel is an edge.

6 **Solution:** Compare edge direction information of the current pixel and the neighbouring pixel(s) to determine the relevance of the current pixel.

7 **Novelty:** Edge determination means for determining edge orientation (and strength/magnitude) based on a group of pixels are well known in the art and are also disclosed in D1 (Section II. First Module). Furthermore, D1 discloses the relevance assigning means (Section III. Second Module, in particular page 806, right-hand column, lines 10-17).

However D1 fails to disclose assignment based on comparison of edge directions.

**8 Inventive Step:**

- 8.1 In **D1** a 3x1 window is put on pixels along the gradient direction of the current pixel and then the importance of each pixel is determined by incrementing counters *n* and *m* (page 806, right-hand column, lines 18-36). Assigning the relevance of edge elements in such a manner doesn't hint at comparison of edge direction as claimed in claim 1.
- 8.2 Applying edge direction information to determine edge elements is long and well known in the art (see e.g. **D2**, page 181, lines 19-21). However, there seems to be no hint at applying this information in a particular way as claimed in claim 1, i.e., by assigning relevance value to the current pixel based on comparison of edge directions between the current and the neighbouring pixel.

**Re Item VII**

**Certain defects in the international application**

- 1 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in document **D1** is not mentioned in the description, nor is this document identified therein.
- 2 Independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT. In addition, the applicant should ensure that it is clear from the description which features of the subject-matter of claims are already known in combination from the document **D1** (see the PCT Guidelines, III-2.3a).